

CLMPTO 09/24/04 JW

Amend Claims 2,4,5,8-11,13-16,18, 20-27, 29-32,34,36-48

Cancel Claims 1,17,33,

1. (Cancelled)

2. (Currently Amended) The apparatus of claim 1, A base station node of a radio access network which determines a number of connections for each of plural spreading factors that can be added to the base station node, and which sends to a radio network controller (RNC) node a capacity indication including a capacity value based on the determined number of connections, wherein the capacity indication includes a vacancy capacity value for each of plural spreading factors.

3. (Original) The apparatus of claim 2, wherein the capacity indication includes a number of connections that can be added at the base station for each of plural spreading factors.

4. (Currently Amended) The apparatus of claim 1, A base station node of a radio access network which determines a number of connections for each of plural spreading factors that can be added to the base station node, and which sends to a radio network controller (RNC) node a capacity indication including a capacity value based on the determined number of connections, wherein the capacity indication is a total capacity value calculated using a vacancy capacity value for each of plural spreading factors.

5. (Original)(Currently Amended) The apparatus of claim 4, wherein the capacity indication is determined at least in part using the following expression:
$$R = \sum_{i=1}^{N_p} W_i \cdot A_i \cdot C_i$$

wherein:

R = free resources;

W_Y = a weighting factor for spreading factor s_Y

A_Y = number of connections that can be added with spreading factor s_Y

C_Y = consumption for spreading factor s_Y according to reported consumption

law

6. (Original/Currently Amended) The apparatus of claim 4, wherein the capacity indication is determined at least in part using the following expression: 6:

$$R = \sum_{Y=1}^{N_{max}} \frac{N_{max}}{N} \cdot A_Y \cdot C_Y$$

wherein:

R = free resources;

W_Y = a weighting factor for spreading factor s_Y

A_Y = number of connections that can be added with spreading factor s_Y

C_Y = consumption for spreading factor s_Y according to reported consumption

law

7. (Original/Currently Amended) The apparatus of claim 4, wherein the capacity indication is determined using the following expression: 7:

$$Cap_{av} = L + R -$$

wherein:

R = free resources;

L = load.

8. (Currently Amended) The apparatus of claim 4 or claim 2 or 4, wherein the base station tracks usage of base station resources for determining the number of connections that can be added to the base station node.

9. (Currently Amended) The apparatus of claim 4 or claim 2 or 4, wherein the capacity indication reports the determined number for a particular spreading factor utilized at the base station node.

10. (Currently Amended) The apparatus of claim 3-claim 2 or 4, wherein the capacity indication reports the determined number separately for uplink transmissions and downlink transmissions relative to the base station node.

11. (Currently Amended) The apparatus of claim 3-claim 2 or 4, wherein the capacity indication reports the determined number based on a combination of free connections for each of plural spreading factors, and using consumption laws appropriate for each of the spreading factors.

12. (Original) The apparatus of claim 11, wherein the combination is a weighted combination.

13. (Currently Amended) The apparatus of claim 3-claim 2 or 4, wherein the capacity indication is included in a SCPP "Resource Status Indication" message.

14. (Currently Amended) The apparatus of claim 3-claim 2 or 4, wherein the capacity indication is included in a message which is distinct from a SCPP "Resource Status Indication" message.

15. (Currently Amended) The apparatus of claim 3-claim 2 or 4, wherein the capacity indication is included in its own dedicated message.

16. (Currently Amended) The apparatus of claim 3-claim 2 or 4, wherein the base station node has plural devices, and wherein the capacity determination is based on a number of free resources per device.

17. (Cancelled)

18. (Currently Amended) The method of claim 17, further comprising A method of operating a radio access network, the method comprising:
determining, for each of plural spreading factors, a number of connections that can be added to a base station node; and

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reading a capacity indication to a radio network controller (RNC) node, the capacity indication including a capacity value which is based on the determined number of connections;

including in the capacity indication as the capacity value a vacancy capacity value for each of plural spreading factors.

19. (Original) The method of claim 18, further comprising including in the capacity indication as the capacity value a number of connections that can be added at the base station for each of plural spreading factors.

20. (Currently Amended) The method of claim 17, further comprising A method of operating a radio access network, the method comprising:
determining, for each of plural spreading factors, a number of connections that can be added to a base station node; and
reading a capacity indication to a radio network controller (RNC) node, the capacity indication including a capacity value which is based on the determined number of connections;
including in the capacity indication a total capacity value calculated using a vacancy capacity value for each of plural spreading factors.

21. (Original/Currently Amended) The method of claim 20, wherein the capacity value is determined at least in part using Expression-3 the following expression:

$$F = \sum_{i=1}^{N_f} W_i \cdot A_i + C_f$$

wherein:

N_f = free resource

W_i = a weighting factor for spreading factor i

A_i = number of connections that can be added with spreading factor i

C_f = consumption for spreading factor f according to reported consumption

law.

22. (Original)(Currently Amended) The method of claim 20, wherein the capacity value is determined at least in part using the following expression:
expression-6:

$$P = \sum_{v=1}^{N_{\text{SF}}} \frac{N_v}{N} \cdot A_v + C_v$$

wherein:

P = free resources;

N_v = a weighting factor for spreading factor v;

A_v = number of connections that can be added with spreading factor v;

C_v = consumption for spreading factor v according to reported consumption

law;

23. (Original)(Currently Amended) The method of claim 20, wherein the capacity value is determined using the following expression:
expression-7:

$$C_{\text{SF},m} = L + P_m$$

wherein:

P_m = free resources;

L = load.

24. (Currently Amended) The method of claim 17 or claim 18 or 20, further comprising tracking at the base station tracks usage of base station resources for determining the number of connections that can be added to the base station node.

25. (Currently Amended) The method of claim 17 or claim 18 or 20, wherein the capacity indication reports the determined number for a particular spreading factor utilized at the base station node.

26. (Currently Amended) The method of claim 17 or claim 18 or 20, wherein the capacity indication reports the determined number separately for uplink transmissions and download transmissions relative to the base station node.

27. (Currently Amended) The method of ~~claim-12~~claim 18 or 20, wherein the capacity indication reports the determined number based on a combination of free connections for each of plural spreading factors, and using consumption laws appropriate for each of the spreading factors.

28. (Original) The method of claim 27, wherein the combination is a weighted combination.

29. (Currently Amended) The method of ~~claim-19~~claim 18 or 20, further comprising including the capacity indication in a 3GPP "Resource Status Indication" message.

30. (Currently Amended) The method of ~~claim-19~~claim 18 or 20, further comprising including the capacity indication in a message which is distinct from a 3GPP "Resource Status Indication" message.

31. (Currently Amended) The method of ~~claim-19~~claim 18 or 20, further comprising including the capacity indication in its own dedicated message.

32. (Currently Amended) The method of ~~claim-12~~claim 18 or 20, wherein the base station node has plural devices, and wherein the capacity determination is based on a number of free resources per device.

33. (Cancelled)

34. (Currently Amended) The apparatus of claim 33, A radio access network for comprising:
a radio network controller (RNC) node;
a base station node connected to the radio network controller (RNC) node, the base station node determining a number of connections for each of plural spreading factors that can be added to the base station node, and which feeds to a radio network controller (RNC) node a capacity indication including a capacity value based on the

determined number of connections, wherein the capacity value included in the capacity indication includes a vacancy capacity value for each of plural spreading factors.

35. (Original) The apparatus of claim 34, wherein the capacity value included in the capacity indication includes a number of connections that can be added at the base station for each of plural spreading factors.

36. (Currently Amended) The apparatus of claim 33, a radio access network for communications:

a radio network controller (RNC) node;
a base station node connected to the radio network controller (RNC) node, the base station node determining a number of connections for each of plural spreading factors that can be added to the base station node, and which sends to a radio network controller (RNC) node a capacity indication including a capacity value based on the determined number of connections, wherein the capacity value included in the capacity indication is a total capacity value calculated using a vacancy capacity value for each of plural spreading factors.

37. (Original/Currently Amended) The apparatus of claim 36, wherein the capacity value is determined at least in part using the following expression Expression-3:

$$P = \sum_{v=1}^V W_v \cdot A_v \cdot C_v$$

wherein:

P = free resources;

W_v = a weighting factor for spreading factor v;

A_v = number of connections that can be added with spreading factor v;

C_v = presumption for spreading factor v according to resource consumption law.

38. (Original/Currently Amended) The apparatus of claim 36, wherein the capacity value is determined at least in part using the following expression Expression-5:

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$$P = \sum_{i=1}^{N_{\text{SF}}} \frac{N_{\text{SF}}}{N} \cdot A_{\text{SF}} = C_{\text{SF}}$$

wherein:

P = free resources;N_{SF} = a weighting factor for spreading factor i;A_{SF} = number of connections that can be added with spreading factor i;C_{SF} = consumption for spreading factor i according to reported consumption law.

39. (Currently Amended) The apparatus of claim 36, wherein the capacity value is determined using the following expression:

$$C_{\text{SF}, \text{tot}} = Z + P,$$

wherein:

P = free resources;Z = load.40. (Currently Amended) The apparatus of ~~claims 23-35~~ claim 34 or 36, wherein the base station node uses of base station resources for determining the number of connections that can be added to the base station node.41. (Currently Amended) The apparatus of ~~claims 23-35~~ claim 34 or 36, wherein the capacity indication reports the determined number for a particular spreading factor utilized at the base station node.42. (Currently Amended) The apparatus of ~~claims 23-35~~ claim 34 or 36, wherein the capacity indication reports the determined number separately for uplink transmissions and downlink transmissions relative to the base station node.43. (Currently Amended) The apparatus of ~~claims 23-35~~ claim 34 or 36, wherein the capacity indication reports the determined number based on a combination of free

connections for each of plural spreading factors, and using consumption laws appropriate for each of the spreading factors.

44. (Currently Amended) The apparatus of claim 43, wherein the combination is a weighted combination.

45. (Currently Amended) The apparatus of ~~claims 23-35~~ claim 34 or 36, wherein the capacity indication is included in a 3GPP "Resource Status Indication" message.46. (Currently Amended) The apparatus of ~~claims 23-35~~ claim 34 or 36, wherein the capacity indication is included in a message which is distinct from a 3GPP "Resource Status Indication" message.47. (Currently Amended) The apparatus of ~~claims 23-35~~ claim 34 or 36, wherein the capacity indication is included in its own dedicated message.48. (Currently Amended) The apparatus of ~~claims 23-35~~ claim 34 or 36, wherein the base station node has plural devices, and wherein the capacity determination is based on a number of free resources per device.

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